

III. Please amend the claims as set forth below:

---

(Original) 1. An AC-to-DC converter comprising:

5 a transformer having a primary side for inputting an input  
signal and a secondary side for outputting an output signal;

a synchronous rectifier controller connected only to circuits  
on said secondary side for controlling a synchronous rectifier  
10 (SR) switch on said secondary side for generating said output  
signal;

said SR switch comprising a MOSFET transistor having a  
gate connected to said synchronous rectifier controller;

15 said synchronous rectifier controller further comprising a  
plurality of circuit elements for turning off said SR switch  
before a main switch of said transformer is turned on and for  
turning on said SR switch when said main switch of said  
20 transformer is turned off;

said synchronous rectifier controller comprising a means for  
generating a dead-time for turning off said SR switch with a  
controlled dead-time before said main switch of said  
25 transformer is turned on;

said synchronous rectifier controller comprising a pulse  
differentiator for resetting and restarting a ramp generator at  
a time when a main switch driving said transformer on;

30 said dead-time means further comprising a voltage-ramping  
means initiated by an output from said pulse differentiator  
for generating an up-ramping voltage;

15  
A5

September 2, 2003

said dead-time means further comprising a dead-time comparator for comparing said up-ramping voltage with a voltage generated by a charge integrator for generating a dead-time signal for turning off an output current driver.

5

said charge integrator comprising a circuit having a fixed time-constant of charge-integration independent of an output load of said AC-to-DC converter;

10

said synchronous rectifier controller further comprising an output current detector for enabling a positive current source for providing a fixed positive current to charge said charge integrator; and

15

said synchronous rectifier controller further comprising a switch for turning on and off said positive current source depending on an output of a secondary winding of said transformer.

20

15  
con 4

(Currently Amended) 2. An AC-to-DC converter comprising:

5 a transformer having a primary side for inputting an input signal and a secondary side for outputting an output DC signal; and

10 a synchronous rectifier controller connected only to circuits on said secondary side for controlling a synchronous rectifier (SR) switch on said secondary side for generating said DC output signal ; -

15 said synchronous rectifier controller further comprising a plurality of circuit elements for turning off said SR switch before a main switch driving said transformer on and for turning on said SR switch when said main switch of said transformer is turned off wherein said synchronous rectifier controller further comprising a means for generating a dead-time for turning off said SR switch with a controlled dead-time before said main switch of said transformer is turned  
20 on.

(Original) 3. The AC-to-DC converter of claim 2 wherein:

25 said SR switch comprising a MOSFET transistor having a gate connected to said synchronous rectifier controller.

September 2, 2003

(Currently Amended) 4. The AC-to-DC converter of claim 2 wherein:

5 said synchronous rectifier controller further comprising a  
6 pulse width modulation means for generating a pulse width  
7 duty cycle based on a feedback signal of said AC-to-DC  
8 converter. ~~a plurality of circuit elements for turning off said~~  
9 ~~SR switch before a main switch driving said transformer on~~  
10 ~~and for turning on said SR switch when said main switch of~~  
11 ~~said transformer is turned off.~~

15 (Currently Amended) 5. The AC-to-DC converter <sup>of</sup> claim 4 wherein:

16 said pulse width modulation means connected to and  
17 controlling said SR switch. ~~said synchronous rectifier~~  
18 ~~controller comprising a means for generating a dead time~~  
19 ~~for turning off said SR switch with a controlled dead time~~  
20 ~~before said main switch of said transformer is turned on.~~

25 (Currently Amended) 6. The AC-to-DC converter <sup>of</sup> claim 5 <sub>2</sub> wherein:

26 said synchronous rectifier controller comprising a pulse  
27 differentiator for resetting and restarting the voltage ramp  
28 generator at a time when a main switch driving said  
29 transformer on.

September 2, 2003

(Currently Amended) 7. The AC-to-DC converter <sup>of</sup> claim 6 2 wherein:

5 said dead-time means further comprising a voltage-ramping means initiated by an output from said pulse differentiator for generating an up-ramping voltage; and

10 said dead-time means further comprising a dead-time comparator for comparing said up-ramping voltage with a voltage generated by a charge integrator for generating a dead-time signal for turning off an output current driver.

(Original) 8. The AC-to-DC converter <sup>of</sup> claim 7 wherein:

15 said charge integrator comprising a circuit having a fixed time-constant of charge-integration independent of an output load of said AC-to-DC converter.

(Original) 9. The AC-to-DC converter <sup>of</sup> claim 7 wherein:

20 said synchronous rectifier controller further comprising a positive current detector for enabling a positive current source for providing a constant positive current to charge said charge integrator; and

25 said synchronous rectifier controller further comprising a positive current switch for turning on and off said positive current source depending on an output of a secondary winding of said transformer.

30

AS  
AC  
Con it

(Original) 10. The AC-to-DC converter of claim 3 wherein:

5 said SR switch comprising a N-channel MOSFET transistor having a gate connected to said synchronous rectifier controller for turning off said MOSFET when a drain of said N-channel MOSFET transistor is driven high.

(Original) 11. The AC-to-DC converter claim 2 wherein:

10 said synchronous rectifier controller comprising a voltage clamp waveform clipper connected to an output of a secondary winding of said transformer for providing a square waveform corresponding to said output of said secondary winding.

15 (Currently Amended)) 12. The AC-to-DC converter claim 2 wherein:

20 said synchronous rectifier controller further comprising a current threshold detector connected to an output of a secondary winding of said transformer for sensing and turning off said SR switch when a current said output of said secondary winding is reduced below a threshold current ~~voltage~~.

25 (Cancelled) 13. A synchronous rectifier controller for an AC-to-DC converter wherein:

30 said synchronous rectifier controller connected only to circuits on a secondary winding of a transformer of said AC-to-DC converter and responding to a voltage of secondary winding for controlling a synchronous rectifier (SR) switch on said secondary side for generating a DC output signal.

September 2, 2003

(Cancelled) 14. The synchronous rectifier controller of claim 13  
wherein:

said SR switch comprising a MOSFET transistor having a  
gate connected to said synchronous rectifier controller.

5

(Cancelled) 15. The synchronous rectifier controller of claim 14  
wherein:

said SR switch comprising a N-channel MOSFET transistor  
having a gate connected to said synchronous rectifier  
controller for turning off said MOSFET when a drain of said  
N-channel MOSFET transistor is driven high.

10

15

September 2, 2003